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ABSTRACT

Much is being written about children's learning styles and using computers to accommodate student variability. Although the computer can support instruction for various learning styles, its use in the classroom should be in the best interests of all children, each of whom may be affected by physical, emotional, sociological, and environmental factors. A computer-assisted instructional management system (CMI) can help support individual learning styles because it can produce a data bank of all feasible student variables, code these to appropriate learning elements, and provide instructional modality preferences. In this respect, it can be very helpful, but teachers still need to provide high quality instruction, incorporate learning styles into curriculum for children who achieve but do not enjoy school, be selective in choosing instructional software to enhance teaching, and overcome any negativism toward computers. Also, distinction needs to be made between media and methods since highly interactive technologies can confuse the two. Teachers need to investigate the usefulness of the computer's adaptive strategies before deciding to use computers in the classroom. (DJR)

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Learning Styles and the Microcomputer Discussed

For a number of years we have been hearing a lot about the importance of determining a child's learning style and respecting it as we teach him/her. In addition, through the efforts of concerned educators, the learning styles have been increased to include elements heretofore not considered. The Dunns (2) have found twenty-one elements to be considered in determining a child's learning style. A number of these elements are discussed in recent periodicals [See references (3) and (4)]. This continuing interest in learning styles is encouraging as children stand to profit from it. The outline of the twenty-one elements follows:

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   4. Structure

III. Sociological
   1. Colleagues
   2. Self
   3. Pair
   4. Team

IV. Physical
   1. Perceptual
   2. Intake
   3. Time
   4. Mobility

V. Psychological
   1. Analytic
   2. Global
   3. Cerebral Dominance
   4. Reflective
   5. Impulsive

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Reputable professional journals are now carrying reports of successes in educational programs which have incorporated learning styles into their instructional programs. A report on the

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Chase Manhattan Project, "Principal as Curriculum Leader," is such a report. E. Petruzillo, Principal, and D.S. Scheinbart, Assistant Principal, of Jamaica High School (8) where the project was carried out, reported results as follows:

> Jamaica High School special education students have shown remarkable achievement gains and improved motivation through our learning styles efforts. "I can't believe school can be so much fun" and "why don't we do this in all our classes?" were frequent student comments. The students became so enthusiastic that their attendance, as well as achievement, improved dramatically. In fact, 78% of the special education students in our learning styles classes were academically successful as compared to 52% in the control special education classes.
>
> As a result of incorporation of the learning styles approach, Jamaica High School's special education program has improved in its academic success measurably. We recommend exploring the possibility for teachers whose students do not seem to achieve in conventional settings. We also believe there is a place for these strategies with children who achieve but do not "enjoy" school.

This last statement seems well worth considering since children between the ages of five and sixteen are required by law to attend school and might be willing to continue their education beyond these years, especially if they had been years of pleasant and satisfying experiences.

In line with this thinking, we have many students who CAN read, but who DON'T read, and, of course, we have the non-readers. Why? What have we done, or what have we not done? This seems a sad commentary, especially since reading, so important in all learning, can afford both pleasure and profit throughout

life. Might it be that more attention to student variability in our teaching would result in a better commentary on the education of our charges?

In this hi-tech age with computers available in many of our schools, can student variability be accomodated through the computer? As of now, it seems that the computer supplements the regular teaching. However, there are those who support the idea of a computer-assisted instructional management system. William Stewart (10) seems to support the idea of a system in which the computer first produces a data bank that indicates all feasible student variables coded to appropriate learning elements. This information includes, among many other things, instructional modality preference.

"Next", Stewart says, "the computer interacts with the data bank to generate individual or group student variable profiles. The computer then formulates individual or group teaching plans." Finally, the author states, "This system can also integrate the latest research findings into school variable profiles to improve their use."

In the May, 1985 issue of Early Years, Dr. Gene Geisert (5) wrote of a project dealing with learning styles and the microcomputer and promised to keep readers of Early Years informed as to the progress of the project. Because no report was noted in a substantial number of subsequent issues, a letter of inquiry was sent to Dr. Geisert. His response was prompt and informative; it follows:

June 11, 1986
6:16 PM

Susan Partridge
1405 Leon Street
Durham, N.C. 27705

Dear Susan:

The project dealing with learning styles and the microcomputer, which I wrote about in "Early Years," is progressing. However, I do not have an issue of "Early Years" to send you to, as I have not yet written a column updating the results. Since you have an interest in the subject, let me take the time to fill you in on the details of three new developments.

1. In New York City's Community School District #4, the Management Information System at the Key School is operative. Members of the Center for Learning Styles and I are adding codes which will correlate student preferences with skill objectives and various district-owned materials. Within the next month, the total system will be complete.

2. Ken and Rita Dunn have been working on a "Learning Styles Inventory" disk which runs on a microcomputer. Students would be able to take the "LSI" test directly on a computer and receive the results within seconds on the printer.

3. Dr. Richard Sinatra and I have packaged a new "Thinking Networks for Reading and Writing" for the Center for Learning Styles. This research-based writing approach uses the concept of advanced organizers, computer/teacher/student interaction and word processing in a single programmatic approach. The classroom kit developed for the Learning Center includes narrative stories and graded materials on reading levels in grades 3, 4, 5 and 6. I have enclosed additional information concerning this item.

I will probably be reporting a more complete progress report in my column in a future issue of "Early Years," but I don't know exactly when that will be. In any event, thank you for your interest.

Sincerely,

Gene Geisert

Dr. Gene Geisert

A question asked by the editor of a reputable periodical comes to mind. Lipsitz (7) asks, "Where is the imaginative, instructional software?" A great deal of the software now available is of the drill type, and, though drill is important, aren't there many more economical ways of providing it? It is felt that these are points worthy of consideration by educators who respect, and provide for, student variability in their teaching.

Lipsitz explains what he thinks would be necessary to get imaginative, instructional software:

> If one would change instructional material, then the best way to do so would be to change the settings and the situations in which those materials are to be used. Most teachers and indeed most schools simply could not use open-ended, free-flowing types of software. Such software goes against the grain of the entire instructional situation that is now extant in a majority of schools at all levels.

Lipsitz's message seems to be that software is not the issue. "What matters most," he says, "is high quality instruction and effective and efficient learning." His colorful statement which follows expresses his feeling very well: "To expect a teacher to seek out imaginative, instructional free-form varieties of software to be used in a highly-structured classroom environment is to believe in the Tooth Fairy. Drill software fits well into drill classrooms!"

Shirl S. Schiffman (9) explains using software infusion as a means of enhancing instruction. She makes it clear that the term software infusion "should not be applied to situations in which the computer is used as a primary delivery system." She lists a substantial number of capabilities that the computer has, one of

which is word processing. Since the computer can accept text, add to it, delete from it, etc., its use by a language arts teacher, for example, should make writing a more satisfying experience for his/her students.

Schiffman's advice for successful infusion into the academic curriculum follows:

> Success will not be measured by acquisition statistics of a software library arbitrarily purchased nor by software packages purchased for non-instructional activities. Success will be achieved when classroom teachers are using a variety of carefully selected pieces of software to enhance the teaching of specific curriculum objectives.

Finally, Schiffman invites teachers to submit examples of Software Infusion to The Curry School of Education, University of Virginia's collection, and she provides the information needed for doing this.

In exploring the computer and individual differences among students, Carol Carrier (1) distinguishes between media and methods. She says:

> Simple methods can be delivered by many different media. However, with highly interactive technologies, media and methods are confounded. To illustrate, interactive video permits the nearly instantaneous visual and auditory review of material from any point in the instructional sequence. Some computer programs can "read" students' on-task data and respond accordingly. Although less interactive media might be capable of employing elements of some of these strategies, many of them depend upon an "intelligent" interactive system. These technologies will serve to extend the methods available to us as designers of instruction.

Carrier went on to add that it might be wise to investigate the usefulness of the computer's adaptive strategies. She offered several examples, one of which was, "A program might provide questions written at different vocabulary levels to students of different reading abilities. "Studies in this vein," she said, "approximate 'research on computers' because they focus on capabilities which if not unique to computers are more conveniently employed by them."

Canadians, Vermette, S.M., Orr, R.R. and Hall, M.M. (11) studied the attitudes of elementary school students and teachers toward computers in education. Their summary and implications follow:

> 1. Both students and teachers acknowledged the educational value and potential of computers, but they were basically negative about the effects of computerization on them personally.
>
> 2. Significant sex differences in attitudes were generally not expressed among students or teachers, although there was some indication of sex-typing regarding domination by males of computer activities, skills, and interests.
>
> 3. Negative socialization effects appear to be an issue among both groups, specifically possible isolating and dehumanizing effects on the classroom.
>
> 4. Widespread differences of opinion between students and teachers were generally not demonstrated. Where differences were apparent, they seem to be related to a tendency toward more consensus among the students.
>
> 5. That negativism toward computers is generally evident among both students and teachers suggests the necessity to impress upon all educators and administrators the need for more widescale efforts to aid the process of adaptation to the new technologies.

Roger Kaufman (6) proposed what is felt to be a good ques-

tion about computer application in educational (and other) environments: "Is it better to use computers or not?" He added that if this question is answered correctly, the issue of utility will be specifically addressed.

It is concluded that the computer has many capabilities, but that its use in the classroom should be in the best interests of all children each of whom is a unique individual with different learning styles, different interests, different psychological make-ups, different emotional strengths, etc.

Implications for Educators

1. Determine the learning styles of your students. Include in your investigation all pertinent physical, emotional, sociological, and environmental factors. Respect the variabilities among the students as you design instructional programs for them.

2. It might be wise to explore the idea of a system in which the computer first produces a data bank that indicates all feasible student variables and then interacts with the data bank to generate individual or group student variable profiles.

3. Try incorporating learning styles into the instructional programs of children who achieve but who do not enjoy school.

4. In order to overcome any existing negativism toward computers among teachers and students, more effort should be exerted to aid them in the process of adaptation.

5. In determining whether or not to use the computer in a given situation, bear in mind the uniqueness of the individuals concerned.

6. Consider contributing your successful computer experiences with fellow educators. Include information about software which proved beneficial in your various instructional programs.

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